

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

TSN2201/TCE2321 –COMPUTER NETWORKS
(All sections / Groups)

20 OCTOBER 2016
2.30 pm-4.30pm
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 4 pages including this cover page.
2. This Question paper contains **SIX** questions of **10** marks each. Answer any **FIVE** questions.
3. The distribution of marks for each question is given.
4. Write all your answers in the Answer Booklet provided.

Question 1

(a) Explain briefly the THREE criteria necessary for an effective and efficient computer network.

(3 marks)

(b) Show the frequency domain representation of the following signal:

$$s(t)=8 + 3\sin 100\pi t + 5\sin 200\pi t.$$

(3 marks)

(c) Describe the FOUR major duties of data link layer in the OSI model.

(4 marks)

Question 2

(a) State ONE application for (i) Radio waves (ii) Microwaves and (iii) Infrared signals.

(3marks)

(b) Using a 5-bit frame sequence number, what is the maximum size of the sending and receiving windows for each of the following protocols:

(3 marks)

(i) Stop-and-Wait ARQ

(ii) Go-Back-N ARQ

(iii) Selective- Repeat ARQ

(c) Given the data word 1101011011 and the divisor 10011, calculate

(i) CRC and

(ii) Codeword generated at the sender side

(4 marks)

Question 3

(a) What are the advantages of dividing an Ethernet LAN with a bridge?

(3 marks)

(b) The data rate of 10Base5 is 10 Mbps. How long does it take to create the smallest Ethernet frame? Show your calculation.

(3 marks)

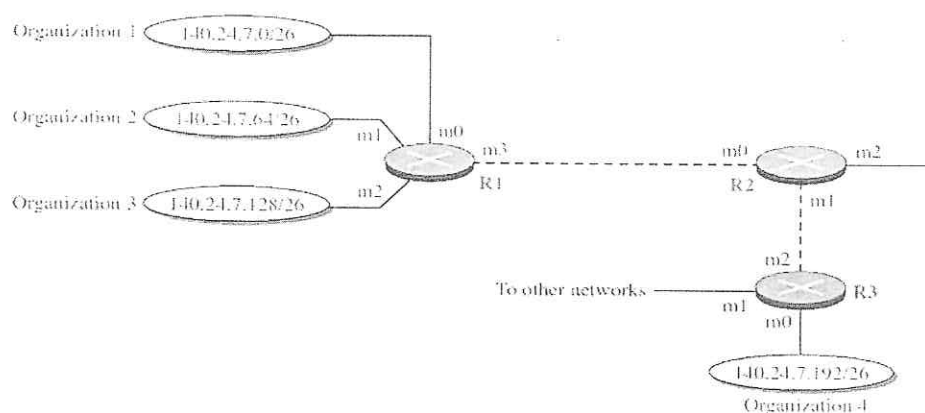
(c) Explain the CSMA/CD protocol with a flow diagram.

(4 marks)

Continue...

Question 4

- (a) What is the purpose of Dynamic Host Configuration Protocol (DHCP)? Explain the operation of DHCP protocol. (3 marks)
- (b) In a block of addresses, assuming that the IP address of one host is 182.44.82.16/26, find the first address (network address) and the last address in this block. (3 marks)
- (c) Determine the Routing Table for Router R1 in the network below assuming that m3 from R1 is a default route. (4 marks)

**Question 5**

- (a) List the functions of the Internet Control Message Protocol (ICMP) and Internet Group Management Protocol (IGMP) that are used in the network layer. (3 marks)
- (b) A transport layer protocol can be connectionless or connection-oriented. Explain the difference between these two communication modes and give the name of a protocol for each one of them. (3 marks)

Continue...

(c) Explain the FOUR steps involved in the creation of a routing table with link state routing.

(4 marks)

Question 6

(a) What is the difference between open-loop congestion control and closed loop congestion control? Explain the back pressure and choke packet methods that are used for congestion control. (3marks)

(b) Explain why we need a message access agent such as POP3 or IMAP4 in addition to the simple mail transfer protocol (SMTP) for electronic mail. (3 marks)

(c) Explain the FOUR functions of network management. (4 marks)

End of Question Paper